

# Mindfulness tools for teachers and learners: Neuroscience informed strategies for emotional resilience

Michael J. Crowley and Denis G. Sukhodolsky

# Learning objectives

- Behavioral health impact of the pandemic – implications for students and teachers.
- What do we mean when we talk about stress, anxiety, irritability and trauma?
- A mindful approach to coping with negative emotions.
- Learning and the mindful brain.

**Impact of the pandemic –  
implications for students and teachers.**

# Mental health impact of COVID-19 pandemic

- Online survey of 4909 adolescents and adults (Murata et al, August 19, 2020)
  - Depression – 32%; Anxiety – 31%; Post-traumatic symptoms - 34%
  - Sleep problems – 58%
  - Adolescents reported higher symptoms than adults
  - Loneliness, perceived stress predicted greater anxiety and depression
- Meta-analytic review of prevalence rates in children (Racine et al, August 09, 2021)
  - 29 studies with a total of 80 879 participants were included in meta-analysis
  - Prevalence estimates of clinically elevated depression = 25% and anxiety = 20.5%
  - Prevalence rates were higher in studies collected later in the pandemic and in girls
  - The rates of depression and anxiety in children have doubled compared to pre-pandemic levels.

# School Format and Child Behavioral Health

- Survey of 405 parents about their children's behavior during remote, hybrid or in-person learning.
- Data collected during 4 waves from January 4 to May 23, 2021.
- 57% of children switched learning format at least once
- More maladaptive and dysregulated behavior were reported during remote learning

From Hanno et al., *JAMA Pediatrics*, published online January 10, 2022

Figure 1. Children's Learning Format by Survey Wave

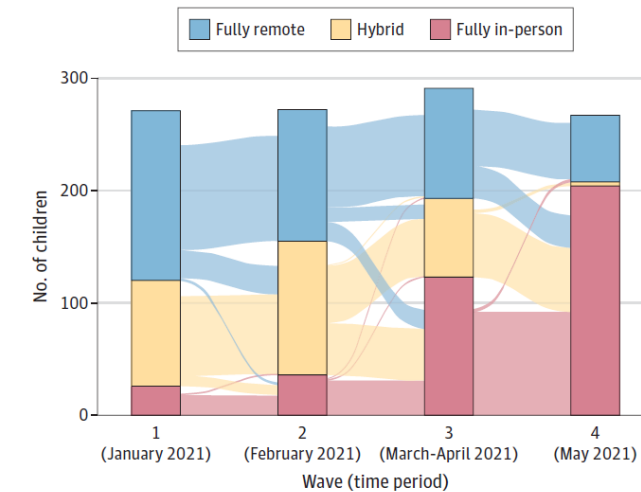
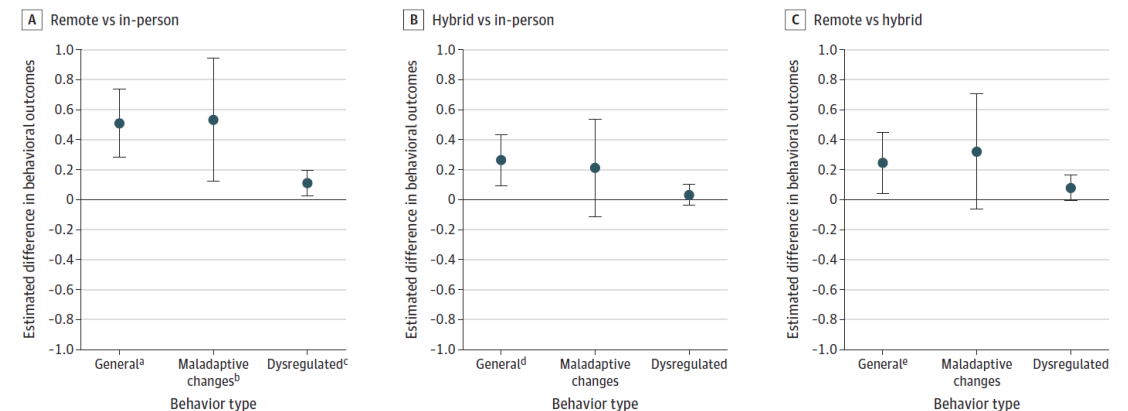


Figure 2. Estimated Mean Within-Child Differences in Behavioral Outcomes Across School Learning Formats



# Coping with COVID-19: Year 1

- Understanding the pandemic
- Understanding how the child feels
- Focus on positive ways to cope
- Keep and normal routine
- Reduce media exposure
- Stay healthy and fit
- Keep a positive outlook
- Help others and give thanks
- Stay relaxed



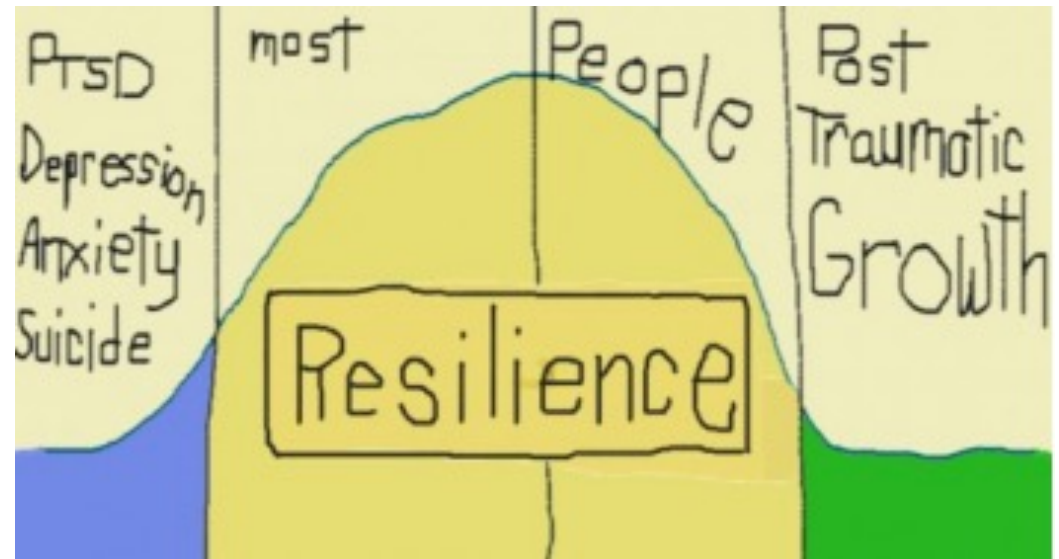
# Helping children flourish: Year 2

- Setting and achieving meaningful goals in school and at home.
- Making friends and maintaining positive social relationships.
- Building emotional resilience: learning to cope with frustration and anxiety.



# Building emotional resilience: Year 3

- Psychological well-being
- Health promotion
- Work-life balance
- Mental wellness
- Languishing to flourishing

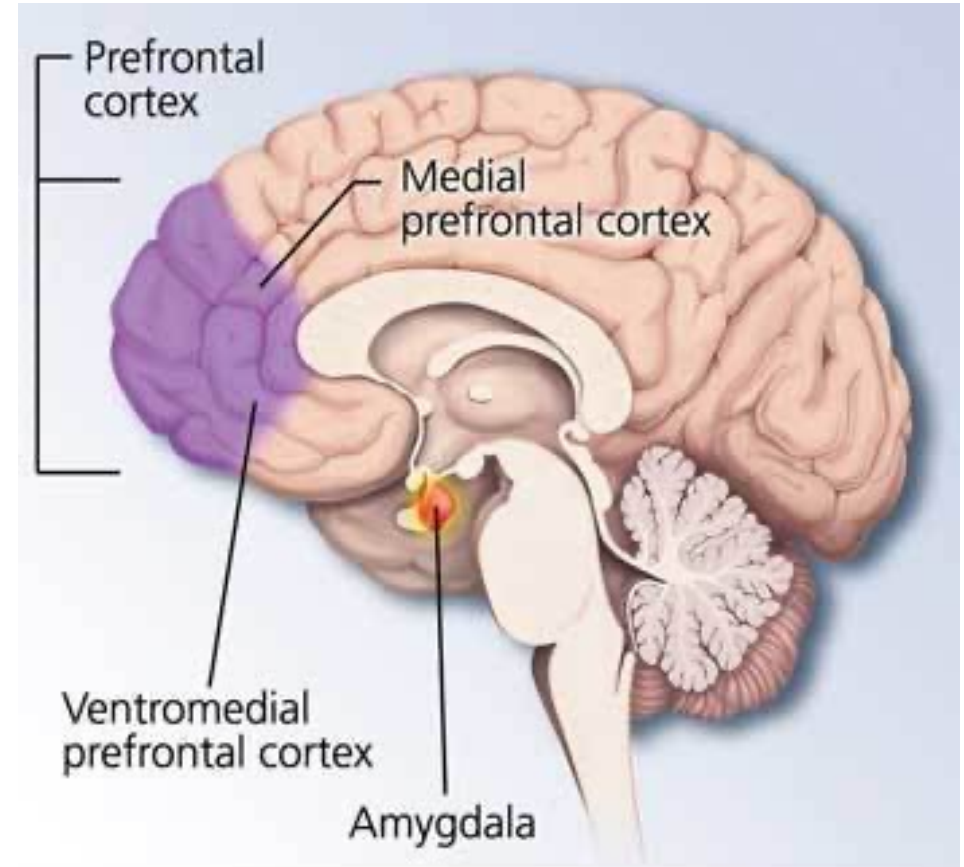




**What do we mean when we talk about stress, anxiety, irritability and trauma?**

# Emotional resilience and the brain

- Emotional reactivity
  - Anger
  - Anxiety
- Emotion regulation
  - Awareness
  - Competence
- Cognitive control
  - Goal setting
  - Planning



# Mindfulness

# What is Mindfulness?

“Mindfulness means paying attention in a particular way; On purpose, in the present moment, and nonjudgmentally.”

(Jon Kabat-Zinn)

“Paying attention, here and now, with kindness and curiosity, and then choosing your behavior”

(Amy Saltzman)

# Mindfulness

- Explosion of interest secular mindfulness strategies (mindfulness, meditation, yoga and others).
- Application to children not surprising.
- Support wellness.
- Adult and child work clearly show benefit.
- Promoting health, alleviating pain, and reducing depression and anxiety (Arias, Steinberg, Banga, & Trestman, 2006; Hofmann, Sawyer, Witt, & Oh, 2010; Kabat-Zinn, 2003).

# What Mindfulness isn't.

- A disciplinary approach (“Go do your mindfulness”, “Someone isn’t being very mindful” = judgement).
- Is only calmness, happiness or just relaxing.
- A “cure all”
- The absence of thought (emptying the mind).
- Religious (it’s a secular practice).

# Core Processes

(1) Present moment awareness

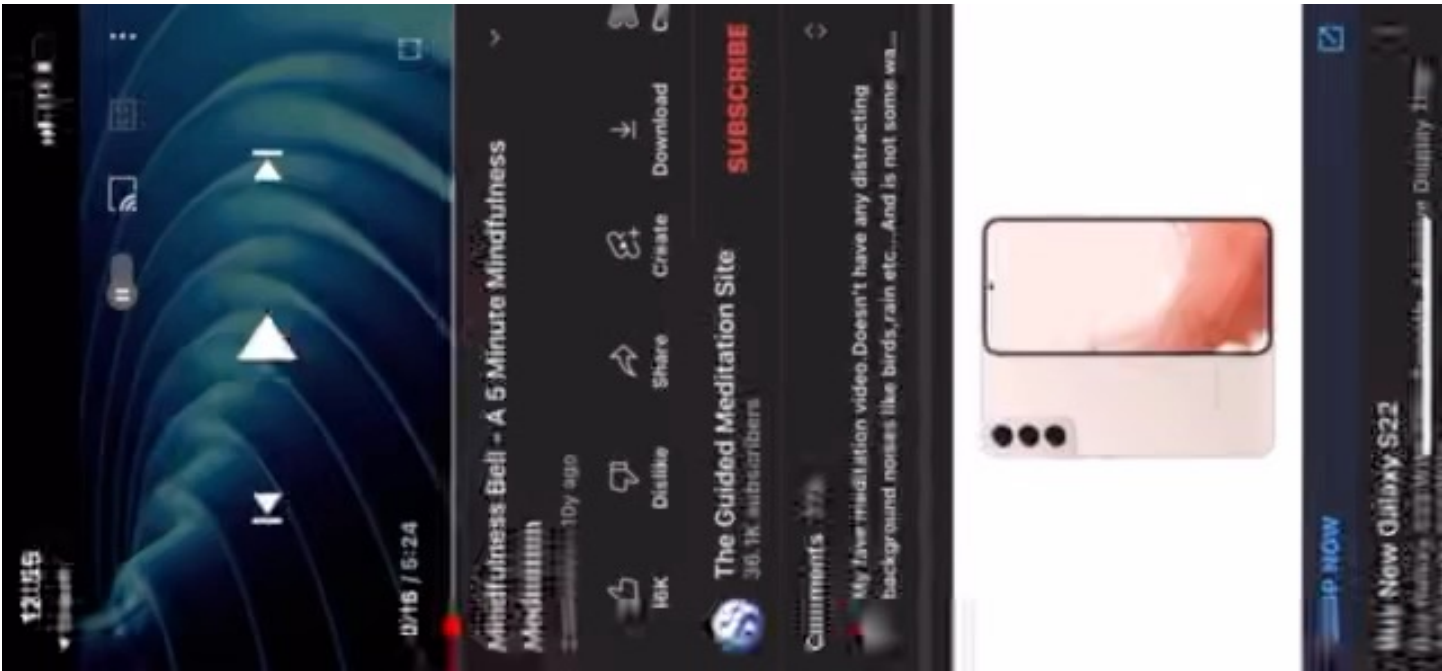
(2) The non-judgemental and dispassionate quality of this awareness.

Core assumption: We are often relatively unaware of our ingrained behavioral habits. Consequently, we move through our lives on partial autopilot. (Bishop et al., 2004; Kabat-Zinn, 1990)

(3) Acceptance

(4) Self-compassion

# Experiential – Mindfulness Meditation with a Bell





# Experiential Attention Training – Body Scan

- Students are instructed to focus their attention on the present moment using an “anchor,” for instance, the breath.
- When the mind drifts away, the focus is gently brought back to the present moment experience.
- The student tries to simply observe his or her experience of the present moment without judging or modifying it.

# Experiential – Loving Kindness for Self

Loving Kindness is sending kind wishes. We can send kind wishes to ourselves or others.

**Have students close their eyes and picture themselves somewhere they love, surrounded by things that make them feel happy and peaceful.** Have them notice what they feel in their heart as they do this.

**Tell students to send these wishes to themselves silently after they hear each one:**

May I be healthy and strong (pause)

May I be happy (pause)

May I be peaceful (pause)

May I have joy in my life (pause)

May I welcome myself just as I am

# Experiential – Loving Kindness for Others

Loving Kindness can also be used to send good wishes to others.

Students: **close your eyes and picture someone you see every day that makes them happy.** It can be a person or even a pet or animal.

“Picture the person happy and smiling, perhaps doing something they love, or something that makes you smile. Notice how you are feeling.”

**Now, send them good wishes from your heart. Silently repeat these wishes in your mind after I say each one:**

May you be healthy and strong (pause)

May you be happy (pause)

May you be peaceful (pause)

May you have joy in your life”(pause).

# Mindfulness-based interventions in Schools



## Mindfulness-based interventions in schools—a systematic review and meta-analysis

**Charlotte Zenner, Solveig Herrnleben-Kurz and Harald Walach\***

*Institute for Transcultural Health Studies, European University Viadrina, Frankfurt Oder, Germany*

- Published school based studies as of August 2012
- Examined within group pre-post changes for intervention
- Examined between group effects for all controlled trials.
- Feasibility - Acceptability; Implementation
- 1/3 unpublished material



# Mindfulness-based interventions in schools—a systematic review and meta-analysis

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Domain	Type of effect size	Sample		Effect size		Heterogeneity
		<i>K</i>	<i>n</i>	Hedges's <i>g</i>	95%—CI	<i>I</i> <sup>2</sup>
Cognitive performane	pre-post	8	327	0.68	(0.33, 1.03)	88%
	Controlled	7	569	0.80	(0.35, 1.26)	82%
Emotional problems	pre-post	11	693	0.31	(0.19, 0.42)	44%
	Controlled	9	903	0.19	(−0.03, 0.41)	52%
Stress	pre-post	8	374	0.36	(0.05, 0.66)	85%
	Controlled	7	674	0.39	(0.07, 0.71)	78%
Factors of resilience	pre-post	17	1082	0.38	(0.20, 0.55)	86%
	Controlled	13	1497	0.36	(0.09, 0.62)	82%
Third person Ratings	pre-post	8	448	0.34	(0.08, 0.60)	84%
	Controlled	6	591	0.25	(−0.10, 0.61)	74%

# What about mindfulness for teachers?

- Meta-cognitive effects
- Well-regulated self
- Promotes greater attention to the immediate environment
- Assists teachers to respond proactively when negative events occur in the classroom.
- Many different adaptations of mindfulness have shown positive results.
- Intervention's range from mindfulness trainings and professional developments occurring weeks apart to daily mindfulness practices on and off school grounds by trained facilitators, and even interventions that involved group discussion, lecture, and home practice

# What about Teachers?


## Meta-analysis of mindfulness training on teacher well-being

Kary Zarate  | Daniel M. Maggin | Amanda Passmore

*Psychol Schs.* 2019;56:1700–1715.

- Examined only mindfulness
  - Large effects on feelings of mindfulness,
  - Moderate effects for decreases in stress and anxiety
  - Small effects on feelings of depression and burnout
- see also:

### The Effectiveness of Interventions Aimed at Reducing Teacher Burnout: a Meta-Analysis

Alina Eugenia Iancu<sup>1</sup> • Andrei Rusu<sup>1</sup> •  
Cristina Măroiu<sup>1</sup> • Roxana Păcurar<sup>1</sup> •  
Laurențiu P. Maricuțoiu<sup>1</sup> 

*Educ Psychol Rev* (2018) 30:373–396  
DOI 10.1007/s10648-017-9420-8

### Mindfulness-Based Interventions for Teachers: A Meta-Analysis of the Emerging Evidence Base

David A. Klingbeil | Tyler L. Renshaw  
University of Texas at Austin | Utah State University

*School Psychology Quarterly*

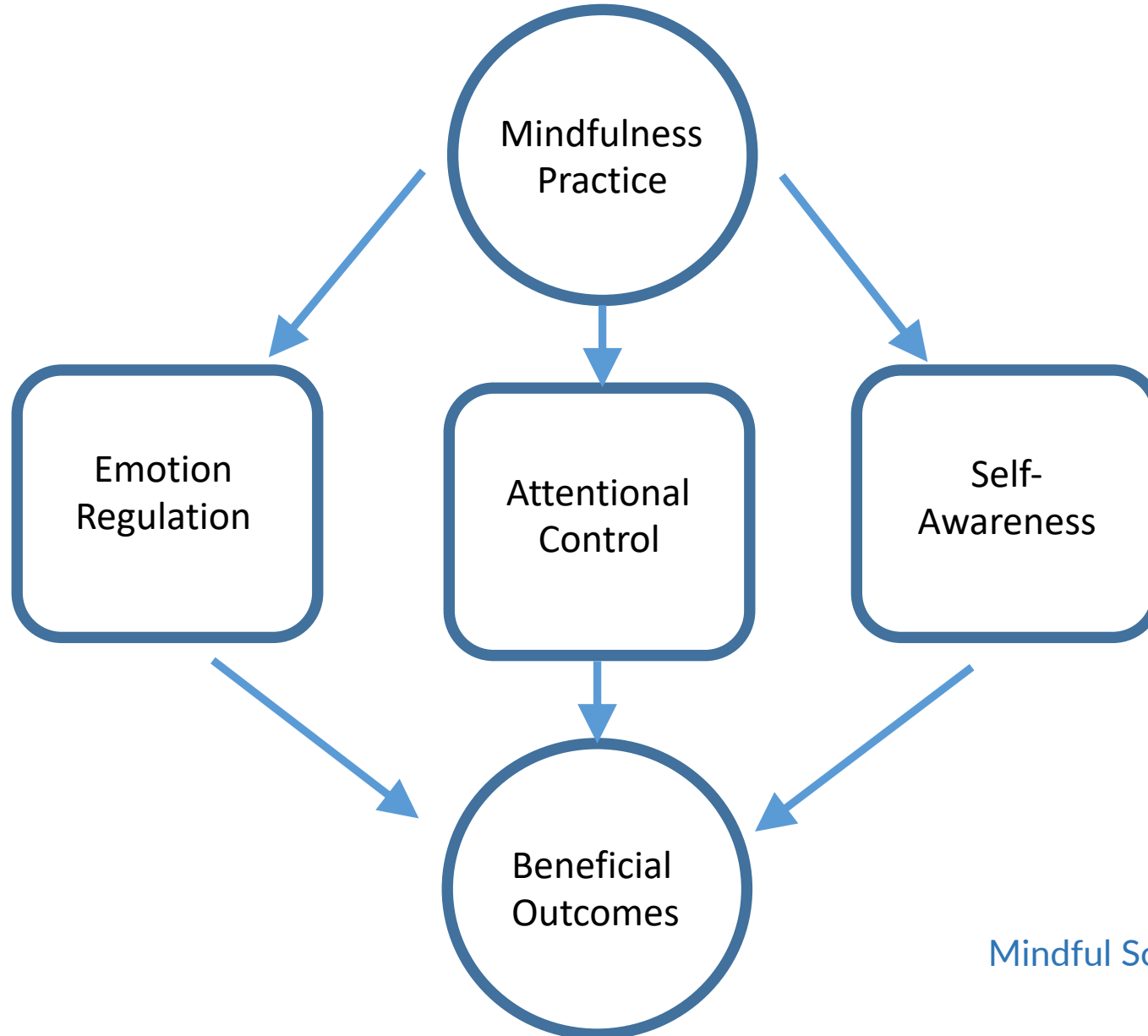
2018, Vol. 33, No. 4, 501–511  
<http://dx.doi.org/10.1037/spq0000291>

# **Learning and the Mindful Brain.**



# Three Skills Cultivated by Mindfulness:

Model from Posner et al. (2015)

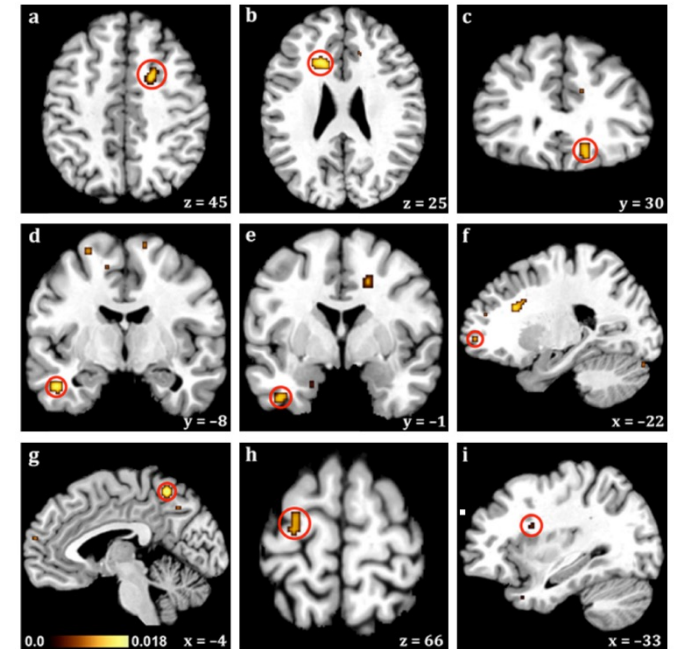


# Why Mindfulness for Brain and Body?

- Dealing with Stress (MBSR)
- Long-lasting and intense stress has been linked to a smaller memory center (hippocampal volume) in a child's brain.
- Stress impairs a child's performance in school.
- Childhood stress can take away years of a person's life (literally; telomere length).
- Chronic stress can cause long-term damage to the developing brain and can impair immune system function (inflammation).

# Mindfulness and Neurocircuitry

- Repetition and practice to cultivate more positive habits of mind.
- Mental training that can induce changes in the brain, “plasticity” (Lutz, Brefczynski- Lewis et al., 2008).
- Meshes well with neuroscientific understanding of how new connections are formed to build brain circuits – foster complex cognitive function (see Klingberg, 2010).

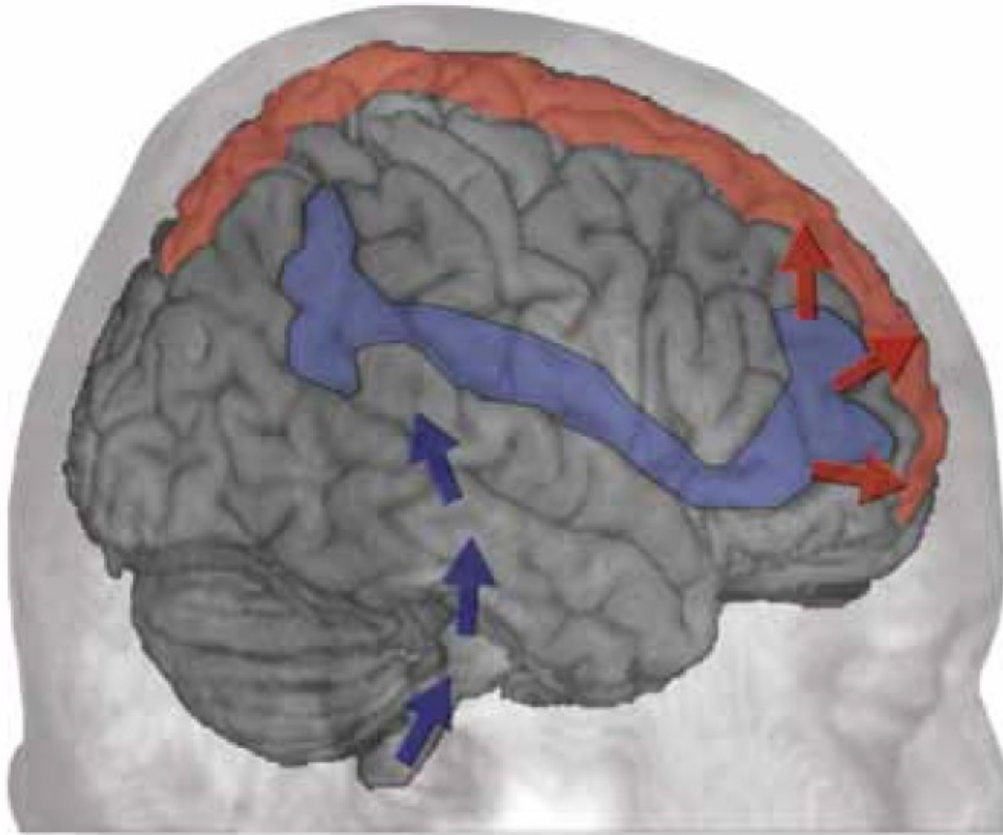


for a review see:  
(Fox et al., 2014, Neuroscience  
& Biobehavioral Reviews)

# How Does Mindfulness Work?

- Cognitive and affective processes can be engaged and disengaged more easily by means of dissociated networks of **self-reference** and **self-regulation**.
- Mindfulness practice seems to cultivate more present-oriented experiential forms of self-awareness (ESA) instead of introspective, narrative forms of self-awareness (NSA); Farb et al., 2007).
- The ESA involves relative increases in activity in a network comprising the ventral and dorsolateral PFC, right anterior insula, somatosensory cortex, and inferior parietal lobe.
- Whereas the NSA involves relative increases in activation of cortical midline structures.

# Mindfulness practice is associated with brain changes



Sensation flows from our body into brain regions associated with present-moment awareness (**blue**), often activating a connected set of brain regions associated with descriptions, narratives, and evaluations (**red**). Mindfulness training appears to weaken this body/narrative association.

(Image Norman Farb).

# Mindfulness practice is associated with brain changes

Studies show eight brain regions were altered in experienced meditators:

- Introspection, awareness of how you think, processing complex, abstract information (***Rostrolateral prefrontal cortex***)
- Tactile information, touch, pain, proprioception (***Sensory cortices and insular cortex***)
- Memory formation, emotional response (***Hippocampus***)
- Self-control, emotional regulation (***Anterior cingulate cortex and mid-cingulate cortex***)
- Communication between brain hemispheres (***Superior longitudinal fasciculus and corpus callosum***)

# Stress, anger and related behaviors

## Common complaints

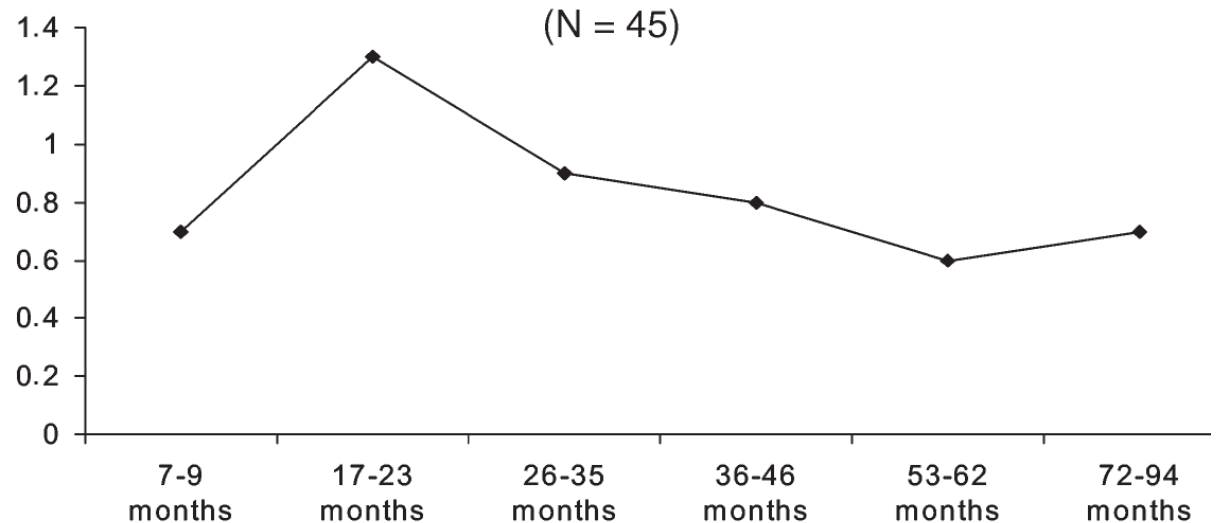
- Meltdowns
- Outbursts
- Emotional reactions
- Dysregulation
- misbehavior
- Overreacts
- Disruptive
- Does not listen
- Disrespectful

## Research language

- **Anger** – emotional state varying in intensity from annoyance to rage that may increase propensity for aggression.
- **Irritability** – increased tendency to experience and exhibit anger relative to peers.
- **Aggression** - observable behavior which can result in harm to self or others..

# Anger in typical development

- Frequency
  - from 1 per day to 1 per week
- Intensity
  - barely noticeable to all consuming
- Duration
  - 5 to 30 minutes
- Physiological responses
  - Arousal, feeling “hot”
- Thoughts of retribution
  - Imagining strong-worded response



Frequency of anger outbursts for 10 hours of observation.  
Data from Goodenough (1931).



# Possible mechanisms of child anger outbursts

- Family and parenting factors
  - *Family stress and inconsistent parenting*
- Social-cognitive deficits
  - *Lack of social skills, poor decision making*
- Emotion regulation deficits
  - *Low frustration tolerance, high anxiety*
- Neurocognitive processes
  - *Lack of cognitive flexibility*
- Neural systems vulnerabilities
  - *Chronic stress, reduces cognitive control*



# Emotional awareness

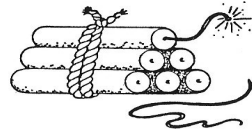
## HANDOUT 1

### Elements of an Anger Episode

Triggers



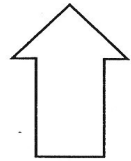
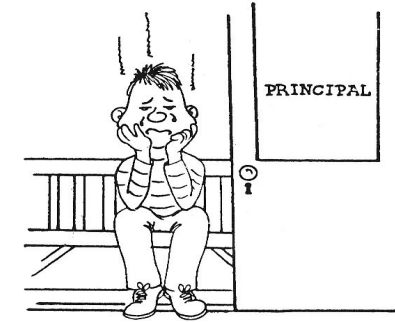
Feelings



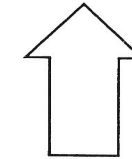
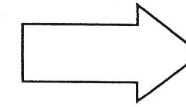
Actions



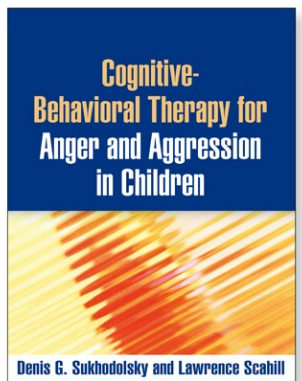
Outcomes



Thoughts



Rules



# Decision Making – thinking ahead

*Imagine you were texting your friend after school and another kid came by and grabbed your phone away from you. He then started to look at the pictures on your phone.*

**What are some different ways that you could solve this problem?**



# Using calming thoughts

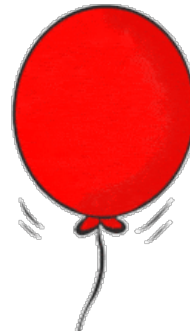
One child in our program reported that a kid in his music class was throwing paper clips at him when the teacher was not looking, and he made a list of thoughts that went through his mind:

- *I'm gonna punch him in the face*
- *Human nature is driving me crazy*
- *It's not worth getting all worked up about*
- *He is an idiot; I don't need to stoop to his level*



# Diaphragmatic breathing

1. *Pretend you are a balloon that gets big when it fills up with air and shrinks when the air goes out.*
2. *Put one hand on your stomach and one hand on your chest.*
3. *Breathe in through your nose, blowing up like a balloon, hold for 3 seconds, and let the air out slowly.*
4. *Practice this exercise for 2 minutes and imagine your stress floating away.*



# Bringing mindfulness to schools



<https://www.mindfulschools.org/>



<https://mindup.org/>



<https://calmerchoice.org/>



## *Best Practices for Bringing Mindfulness into Schools*

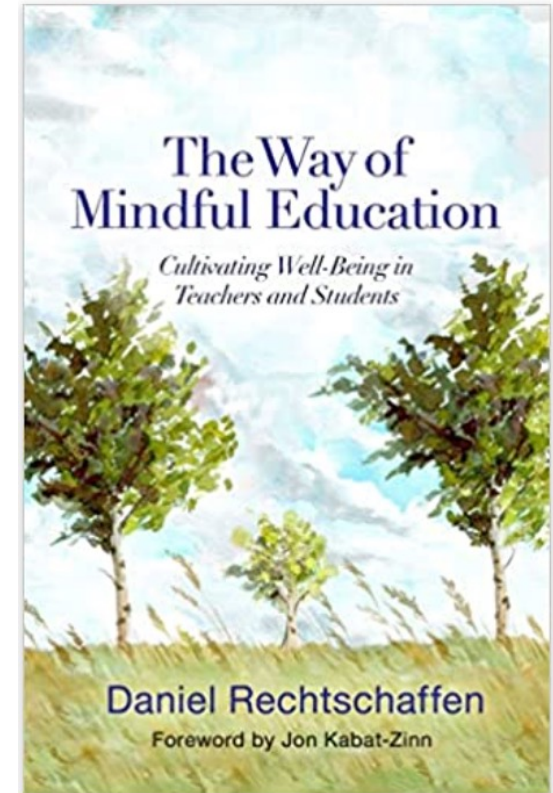
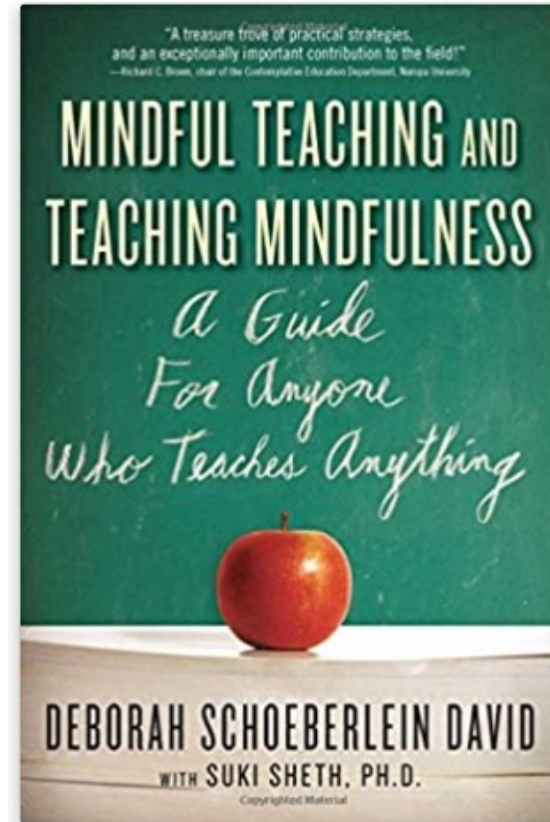
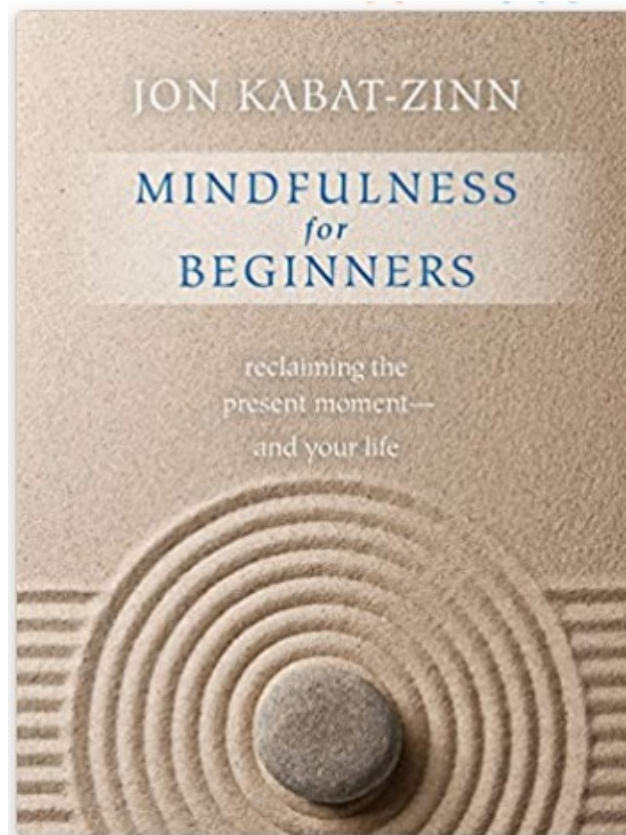
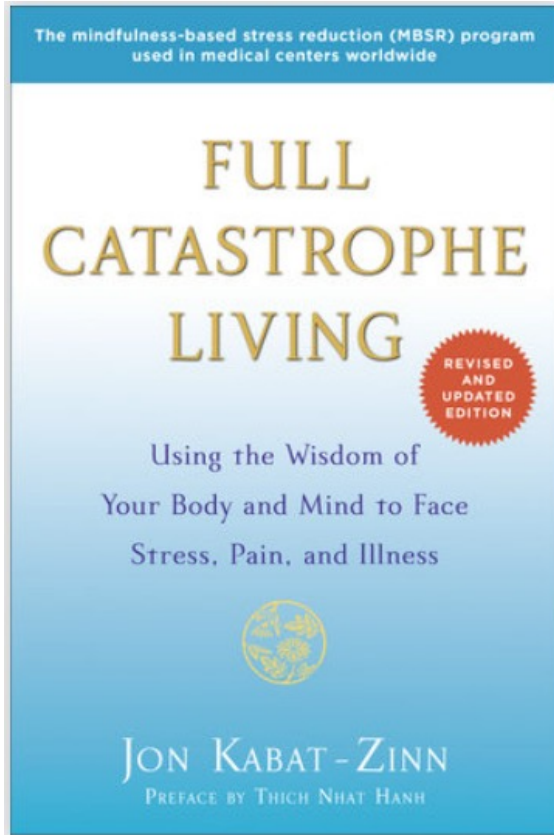
Creating a safe place for our kids to learn might begin with creating some space for them to breathe.

By [Caren Osten Gerszberg](#)

<https://www.mindful.org/mindfulness-in-education/>



# Bringing mindfulness to self and classroom



There are too many too list!

# THANK YOU FOR YOUR ATTENTION

(in the present moment 🙄)

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